

I Claim:

1. A fuel injector for an internal combustion engine,
 - having an injector body (2), which has at least one first injection orifice (3) and at least one second injection orifice (4),
 - having a first nozzle needle (7) that is embodied as a hollow needle and is guided in a first needle guide (6) of the injector body (2), and
 - having a second nozzle needle (9) disposed coaxial to the first nozzle needle (7),
 - in which the first nozzle needle (7) controls the injection of fuel through the at least one first injection orifice (3), and
 - in which the second nozzle needle (9) controls the injection of fuel through the at least one second injection orifice (4),characterized in that the first nozzle needle (7) is embodied with a first catch contour (19), which, once the first nozzle needle (7) opens a predetermined preliminary stroke (24), cooperates with a second catch contour (20) embodied on the second nozzle needle (9), and when an opening movement of the first nozzle needle (7) exceeds the preliminary stroke (24), carries the second nozzle needle (9) along with it.
2. The fuel injector according to claim 1, characterized in that the catch contours (19, 20) cooperate with each other in a in the first leakage chamber (45).
3. The fuel injector according to claim 1 or 2, characterized in that the second nozzle needle (9) does not have a pressure shoulder.

4. The fuel injector according to one of claims 1 through 3, characterized in that

- in order to drive the first nozzle needle (7), a booster piston (28) is provided, which, in a compensator chamber (30), has a first surface (29) that acts in the closing direction when subjected to pressure, and, in a first control chamber (34), has a second surface (33) that acts in the opening direction when subjected to pressure,
- the compensator chamber (30) communicates with a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4), and
- the first control chamber (34) communicates with a second control chamber (36) in which an actuator piston (38) has a third surface (37).

5. The fuel injector according to claim 4, characterized in that

- the booster piston (28) and the first needle (7) constitute a unit that is driven into a shared stroke motion and
- the first catch contour (19) is provided on the booster piston (28).

6. The fuel injector according to one of claims 1 through 3, characterized in that in order to drive the nozzle needle (7), a booster piston (51) is provided, which, in a first booster chamber (53) has a first surface (52) that acts in the closing direction when subjected to pressure, and, in a second leakage chamber (55), is prestressed in the opening direction by a first spring (54).

7. The fuel injector according to claim 6, characterized in that the booster piston (51) has at least one bore (57) via which the second leakage chamber (55) communicates with the first leakage chamber (45).

8. The fuel injector according to claim 6 or 7, characterized in that

- a control piston (61) is provided, which has a forward stroke surface (62) in a control chamber (63) and the return stroke surface (60) in a second booster chamber (59),

- the control chamber (63) communicates with a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4),

- the return stroke surface (60) and the forward stroke surface (62) are disposed at opposite ends of the control piston (61),

- the control piston (61) separates the control chamber (63) from the second booster chamber (59), and

- the first booster chamber (53) communicates with the second booster chamber (59).

9. The fuel injector according to one of claims 6 through 8, characterized in that the control chamber (63) communicates with the second booster chamber (59) via a throttle path (66).

10. A fuel injector according to one of claims 1 through 3, characterized in that

- in order to drive the first nozzle needle (7), a booster piston (68) is provided, which, in a control chamber (70), has a first surface (69) that acts in the closing direction when subjected to pressure, and

- a control piston (72) is provided, which has a control surface (75) in the control chamber (70) and is driven by an actuator (74) to enlarge the volume in the control chamber (70).

11. The fuel injector according to claim 10, characterized in that the control piston (72) is guided coaxially inside the booster piston (68).

12. The fuel injector according to claim 10 or 11, characterized in that
- the control chamber (70) is supplied from a filling chamber (78) that communicates with a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4), and
 - the control chamber (70) communicates with the filling chamber (78) via a throttle path (81).
13. The fuel injector according to one of claims 10 through 12, characterized in that the second nozzle needle (9) is prestressed in the closing direction by a second spring (50), one end of which rests against the second nozzle needle (9) the other end of which rests against a supporting end (85) of the control piston (72) oriented away from the control surface (75).